The effects of a macroprudential loosening: the importance of borrowers' choices

Elena Durante & Fergal McCann

Central Bank of Ireland

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A disclaimer

This work is preliminary and unpublished.
The views presented in this paper are those of the authors and do not necessarily represent the official views of the Central Bank of Ireland or the European System of Central Banks.

Introduction

- Macroprudential policies have grown hugely in popularity after the Global Financial Crisis.
- These policies have broadly taken three forms:
  1. **Bank capital measures**: Counter-Cyclical (CCyB); Systemic Risks (SyRB); Interconnectedness and Systemic Importance (OSII)
  2. **Bank funding**: Liquidity Coverage Ratio (LCR), Net Stable Funding Ratio (NSFR)
  3. **Borrower-Based Measures**: Specific to a loan or borrower type.
- Such measures bring with them:
  - **Benefits**: less cyclical volatility, more sustainable credit flows, lower Pr(Financial Crisis), lower risk of damaging and scarring recessions.
  - **Costs**: less lending, less growth, less real estate activity, potentially strong effects on would-be homeowners.

Motivation

- A large literature has built up on the effects of policy tightenings.
- Macroprudential policy tightenings are more common than loosenings - especially in the case of household or mortgage measures.
- Episodies of loosening are much rarer but ... why are becoming even more important? Primacy of tightening over loosening episodes since 1990
  - **Pandemic**: capital measures loosened. Some jurisdictions loosened mortgage restrictions as a stabilization tool.
  - **Public scrutiny on central banks** has increased in the era of quantitative easing and macroprudential policy.

This Paper

- Mortgage measures were introduced in 2015 in Ireland, with differential LTV limits for First Time Buyers (FTBs) across the property price distribution.
- We study a unique policy change in Ireland in 2017 which equalised LTV requirements for all FTBs.
- The design of the policy change creates quasi-experimental conditions for studying:
  - Borrowers' leverage responses to the policy loosening
  - The adjustment mechanism: more debt? more expensive houses? less downpayment, more cash?
- **Findings**: FTBs choose 1.2 pp higher LTV as a result of the policy reform ($\uparrow$ 0.6 in $\frac{debt}{equity}$). This is driven by smaller downpayments, rather than leverage fuelling more expensive property purchase.

The Irish Context - 2017 Policy Review

Table: Changes in First Time Buyer LTV limits from 1 January 2017

	2015 and 2016	2017
Properties valued below €220k	90	90
Properties valued above €220k	$80 < \text{LTV} < 90$	90

- *The property value threshold (€220,000) - above which a lower LTV limit applies for FTBs was re-considered. The threshold was calibrated considering the median house prices in Dublin.*
- *The fixed nominal threshold as part of the LTV limits for FTBs means that the Regulations would have to be updated every year.*
- *Given the medium-term orientation of the measures and the evidences arising from the Reviews, the property value threshold for FTBs have been removed and a 90 per cent LTV limit applies for FTBs at all house prices.*

Data and Empirical Strategy

Data

- "Monitoring Template" (MT) data, proprietary, Central Bank of Ireland.
- Obligatory loan-level return for all lenders originating more than €50m per year since 2015.
- Comprehensive information on loan features, household income, LTI, LTV, location, valuation etc.
- 5 major retail lenders.
- The focus of the paper is on FTBs loans for property purchase only.

Empirical Strategy

- Simple DiD set up:

$$Y_i = \beta_0 + \beta_1 Post + \beta_2 Treat + \beta_3 Post * Treat + \beta_4 X_i \epsilon_i \quad (1)$$

- Y: origination LTV on a new mortgage; $Post = 1$ from 1 January 2017; $Treat = 1$ if property valued above €220k.
- Note: **not** a panel dataset! Mortgages only drawn down once per household.
- **Assumptions**:
  - LTV choices of FTBs are being influenced causally by the policy change at start-2017 in the *Treat* group
  - Any changes in LTV are not attributable to changing composition of borrowers across Pre/Post, Treat/Control

Identification worry (1): FTBs composition

Table: Summary Statistics: Pre and Post period for Treated and Control group

	Pre *Control*	Post *Control*	Pre *Treat*	Post *Treat*
Prop. Value	152,613	160,814	335,129	349,211
Loan Size	124,864	132,296	255,003	273,060
LTI	2.63	2.70	3.21	3.29
Income	49,397	50,645	82,731	85,373
Prop. Size	1236	1295	1331	1321
Joint Appli.	0.54	0.55	0.75	0.77
Empl.	0.08	0.06	0.09	0.06

Note: MT data (2015-2018). All loans originated in 2015 and 2016 are designated "Pre", while all loans originated in 2017 and 2018 are designated "Post". Property Size measured in square feet. Empl. relates to borrowers receiving irregular income such as through self employment.

Identification worry (2): non-parallel house price trends

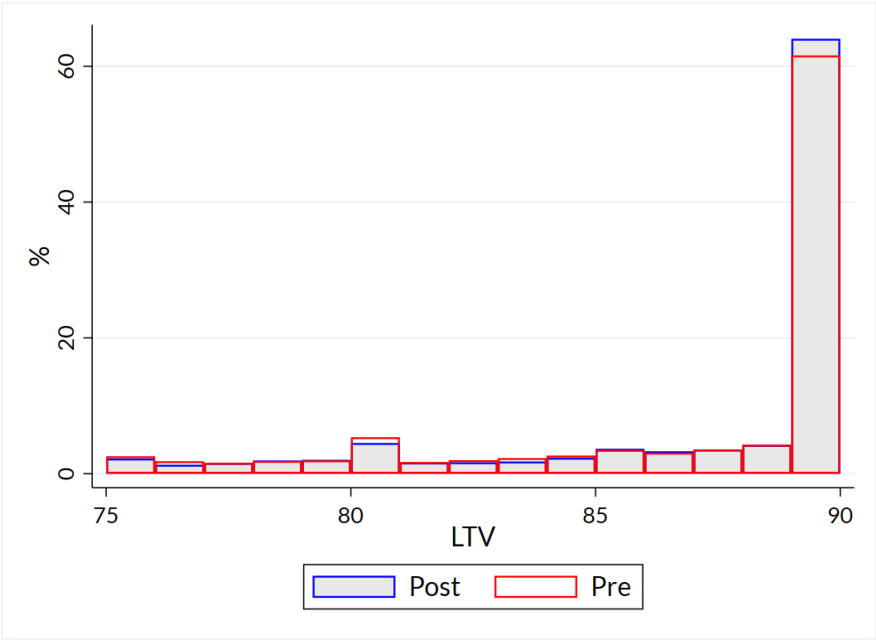
- **Intuition**: our *Treat* and *Control* may not be good groups to use for causal identification because the housing market is evolving differently across the two.
- **Worry**: house price growth from 2016 into 2017 is higher among more expensive properties
- $\rightarrow$ house price growth could explain higher LTVs among *Treat* loans, rather than the policy change.
- **Empirical evidence**: price growth was actually *weaker* among higher-priced properties, suggesting identification is not polluted through this channel.
- **How we deal with it?**: we control for country-time varying house price indices.

House Price Trends in Ireland

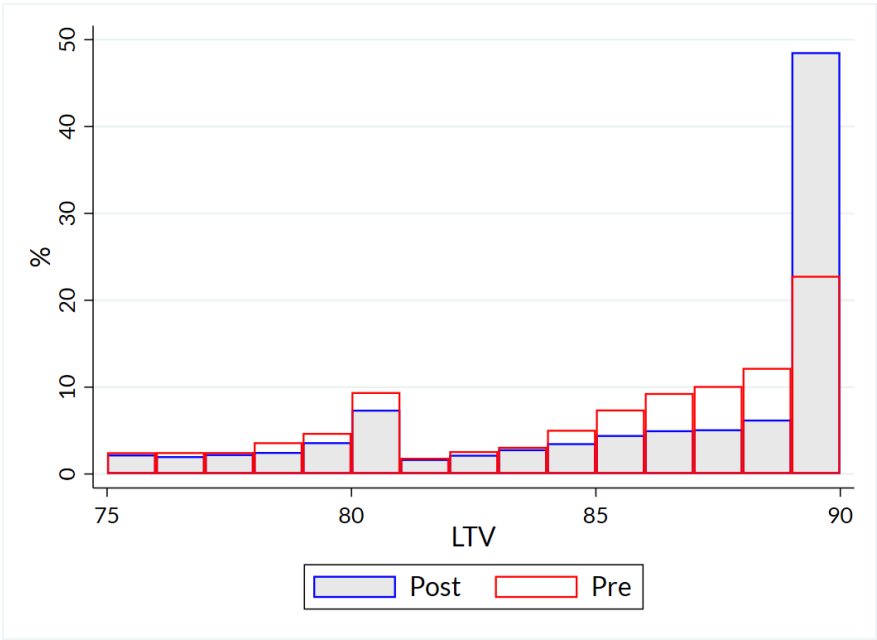
Empirical Results 1 - LTV effects

LTV Bunching - Treated and Control Group

(a) Control Group



(b) Treated Group



LTV distribution across Treated and Control in the Pre and Post Period

Baseline model of LTVs

Table: Baseline DiD results for LTV ratios

	(1)	(2)	(3)	(4)	(5)	(6)
Post	0.389**	0.354*	-0.295	-0.416**	-0.613***	-0.053
	(0.196)	(0.197)	(0.181)	(0.197)	(0.190)	(0.199)
Treatment	-4.825***	-4.864***	-14.415***	-14.641***	-15.390***	-14.027***
	(0.198)	(0.199)	(0.209)	(0.228)	(0.220)	(0.227)
DiD	1.700***	1.631***	1.341***	1.034***	1.088***	1.279***
	(0.264)	(0.264)	(0.242)	(0.262)	(0.252)	(0.258)
Observations	47634	47634	47634	40783	40731	38573
R-squared	0.019	0.023	0.179	0.186	0.246	0.265
Bank FE	No	Yes	Yes	Yes	Yes	Yes
Loan Controls	No	No	Yes	Yes	Yes	Yes
Property Size	No	No	No	Yes	Yes	Yes
Borrower Char.	No	No	No	No	Yes	Yes
County HPs	No	No	No	No	No	Yes

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. *Post* indicates all loans originated after Jan 1st 2017. Treatment Group is all loans against properties valued above €220k. Borrower characteristics: marital and employment status. Loan characteristics: loan size, LTI and property size. MT data (2015-2018)

Baseline model of $\frac{debt}{equity}$

Table: Baseline DiD results for leverage ratios

	(1)	(2)	(3)	(4)	(5)	(6)
Post	-0.009	-0.019	-0.113***	-0.157***	-0.199***	-0.107**
	(0.042)	(0.042)	(0.041)	(0.045)	(0.043)	(0.045)
Treatment	-1.488***	-1.476***	-2.916***	-2.973***	-3.129***	-2.882***
	(0.043)	(0.043)	(0.047)	(0.052)	(0.050)	(0.052)
DiD	0.634***	0.630***	0.585***	0.560***	0.573***	0.612***
	(0.057)	(0.057)	(0.055)	(0.059)	(0.057)	(0.059)
Observations	47622	47622	47622	40776	40724	38567
R-squared	0.036	0.039	0.111	0.115	0.169	0.181
Bank FE	No	Yes	Yes	Yes	Yes	Yes
Loan Controls	No	No	Yes	Yes	Yes	Yes
Property Size	No	No	No	Yes	Yes	Yes
Borrower Char.	No	No	No	No	Yes	Yes
County HPs	No	No	No	No	No	Yes

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. *Post* indicates all loans originated after Jan 1st 2017. Treatment Group is all loans against properties valued above €220k. Borrower characteristics: marital and employment status. Loan characteristics: loan size, LTI and property size. MT data (2015-2018)

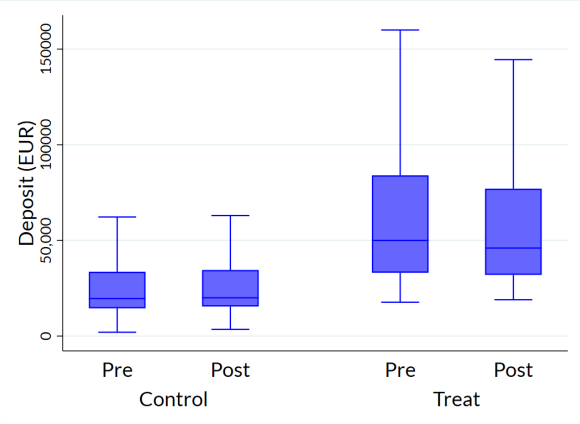
Empirical Results 2 - Mechanisms

... A policy loosening leads to higher FTB leverage

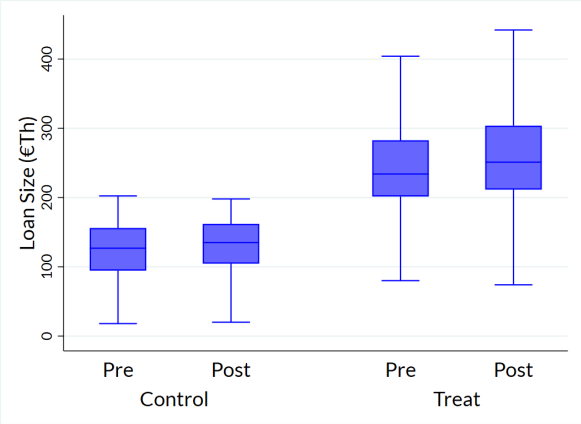
- **... So what?**
- **Classic intuition on housing-credit**: Leverage $\uparrow \rightarrow$ House Prices $\uparrow$
- **Here**: rich granular data to look at the underlying mechanisms.
- If the MaP authority loosens LTV requirements:
  1. *"Classic accelerator"*: Post similar downpayment, buy more expensive house.
  2. *"Liquidity preference"*: Buy similar house, post smaller downpayment, retain more liquidity.
- **Policy implication**: during a period of economic stability, a macroprudential loosening may not necessarily lead to increased housing cyclicality, if (2) is in operation.

Downpayment, Loan size and Property Value distribution

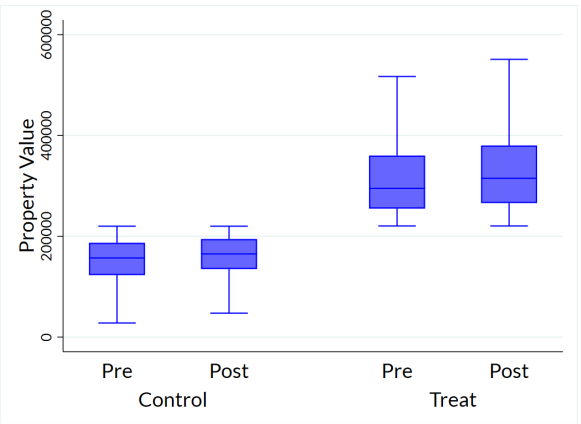
(a) Downpayment



(b) Loan Size



(c) Property Value



Property Value distribution relative to income

- **Downpayment** shrink in the *Treat* group, **Loan sizes** are rising in both groups - but more in the *Treat*, **Property prices** are rising in both groups - but more relative to income in the *Control* group.
- **Evidence**: *Treat* borrowers are adjusting to looser LTV requirements by shrinking downpayments, rather than amplifying the housing-credit cycle.

Three modes of adjustment

- More liquidity, more debt, no asset price effect.

Table: Three adjustment mechanisms

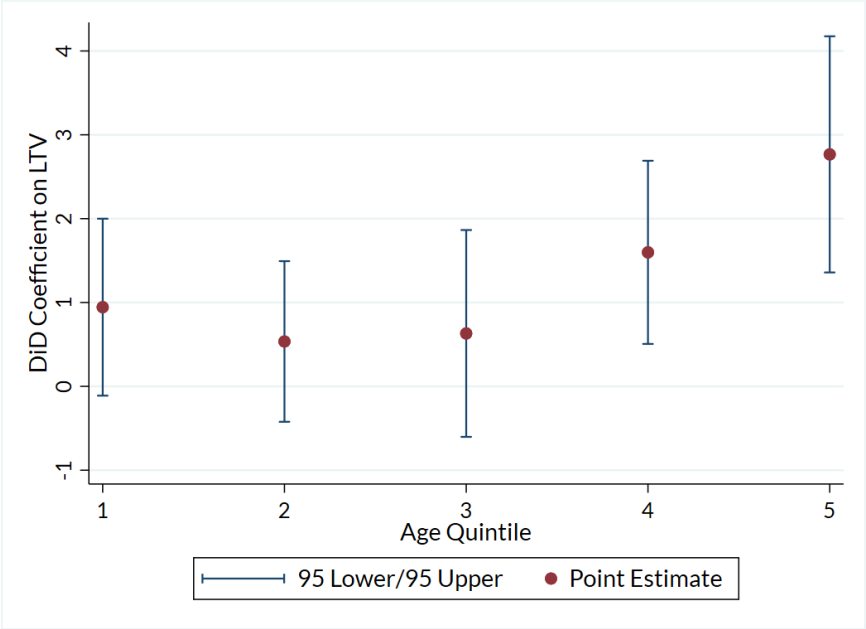
	(1) Downpayment	(2) Loan Size	(3) Property Value
Post	-770.232	-750.802	-1521.035
	(1173.427)	(494.209)	(1272.483)
Treatment	51985.768***	3222.265***	55208.033***
	(1336.228)	(562.776)	(1449.026)
DiD	-3309.173**	5470.000***	2160.826
	(1521.081)	(640.630)	(1649.485)
Observations	38573	38573	38573
R-squared	0.148	0.916	0.699
Bank FE	Yes	Yes	Yes
Loan Controls	Yes	Yes	Yes
Property Size	Yes	Yes	Yes
Borrower Char.	Yes	Yes	Yes
County HPs	Yes	Yes	Yes

Note: Saturated model. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. *Post* indicates all loans originated after Jan 1st 2017. Treatment Group is all loans against properties valued above €220k. Borrower characteristics: marital and employment status. Loan characteristics: income, LTI and property size. MT data (2015-2018)

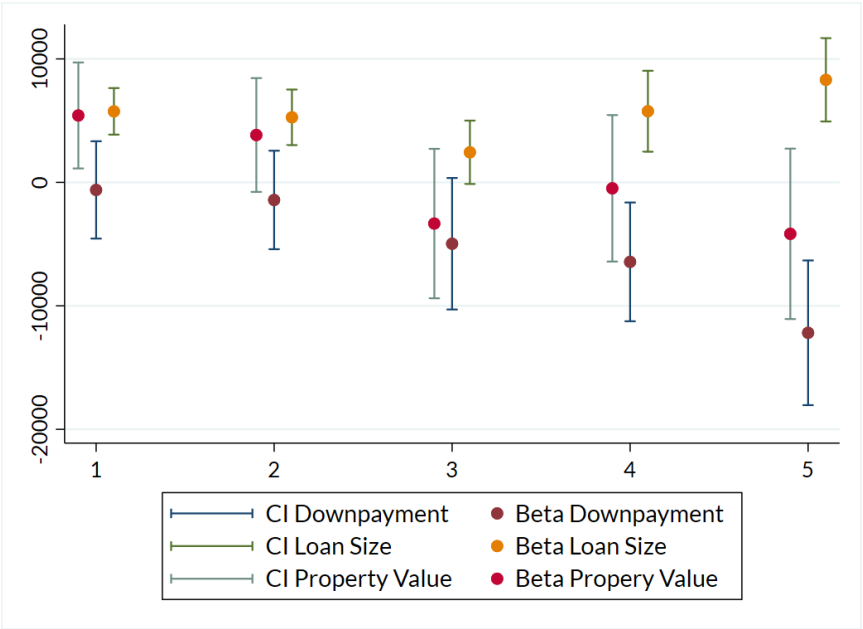
Heterogeneity - age

Heterogeneity and Adjustment Mechanisms by Age quintile

(a) Heterogeneity by Age quintile



(b) Adjustment mechanisms by age quintile



- **Discussion** Older borrowers dominate the response: ↑ leverage in response to a policy loosening (*deposit-reduction channel*).
- **Why do older borrowers drive this response?** *Probably* due to liquidity preferences for non-mortgage expenses.

Conclusions and Extensions

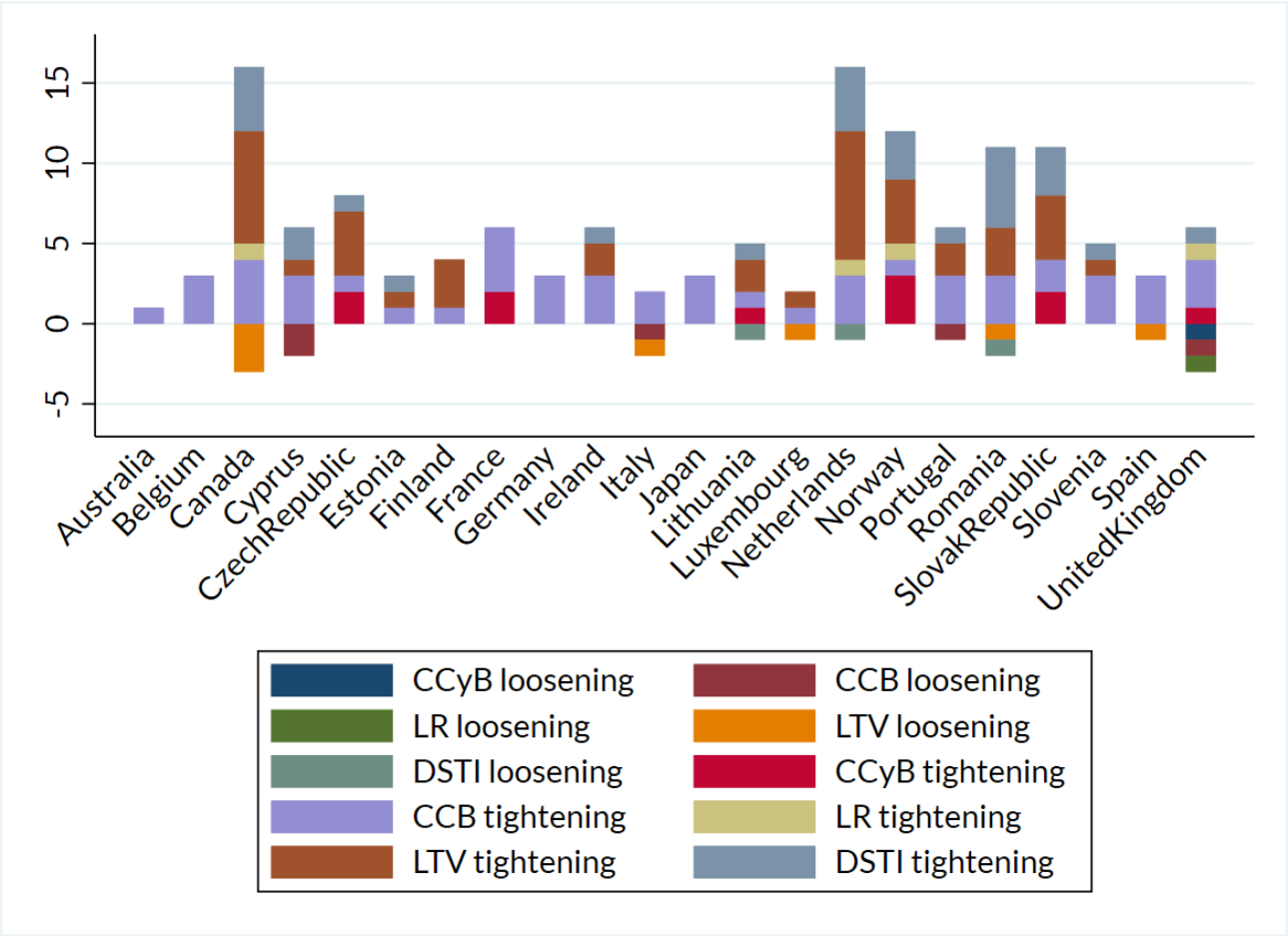
- The Irish 2017 policy reform introduced a looser LTV requirement for FTBs.
- Treated borrowers increase leverage by 1.2 pp in response to the loosening (an increase of 0.6 in $\frac{debt}{equity}$).
- **Mechanism**: retain liquidity rather than purchase more expensive properties.
- Both LTV increases and liquidity retention appear driven by older FTBs.
- **Policy implications**: liquidity reduction is a cost of macroprudential policy. Leverage loosening need not lead to most-intuitive cyclical amplification, if borrowers choose to retain liquidity instead.
- Multi-country analysis could help policymakers in understanding the risks associated with policy loosening.

Thank you!
Go raibh mile maith agaibh!
Grazie!

Background Slides

Primacy of tightening over loosening episodes since 1990

Figure: Primacy of tightening over loosening episodes since 1990



Source: IMF iMapp database (1990 - 2018).

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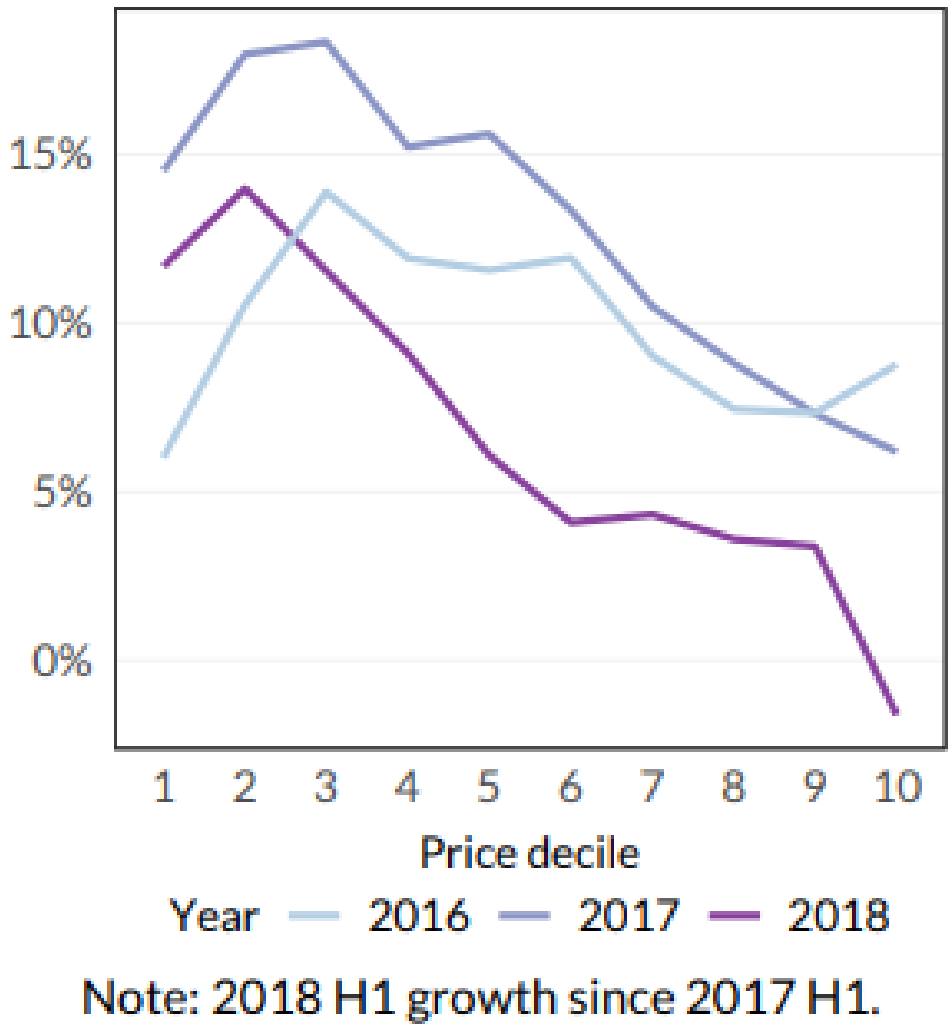
House Price Trend in Ireland

Figure: Annual growth rate of average prices per decile



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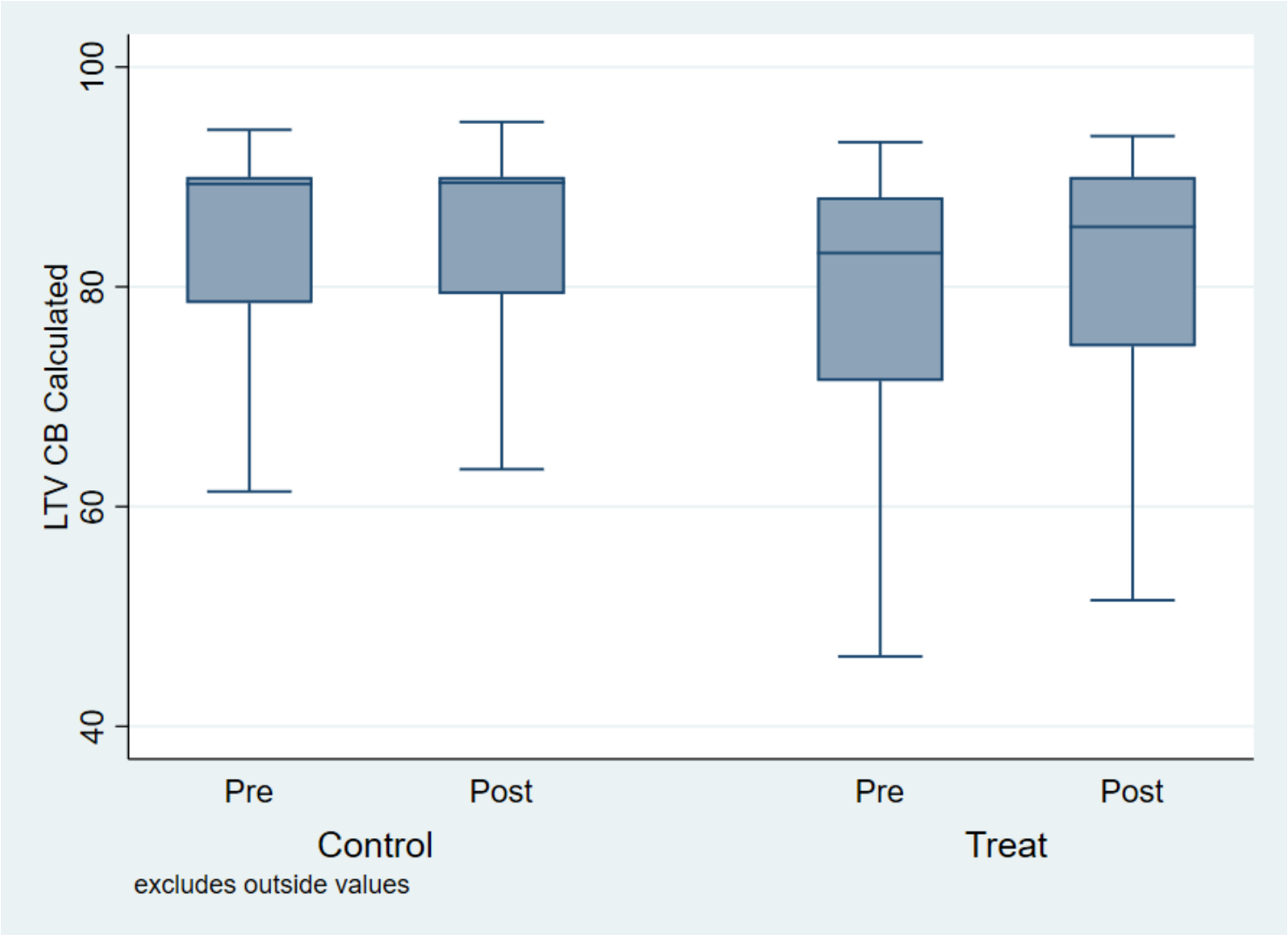
LTV Distribution across the Four Groups



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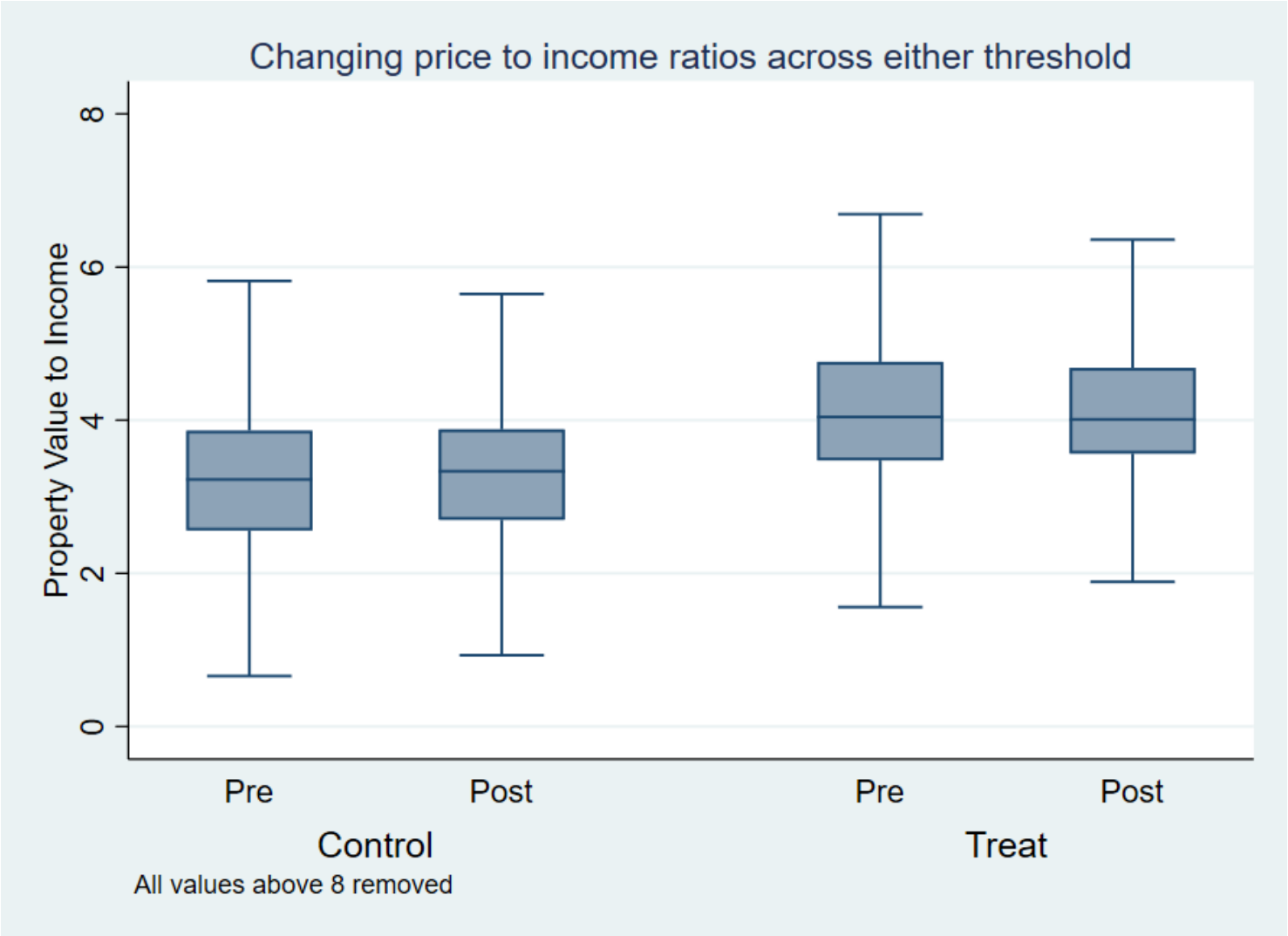
Property Value Distribution relative to Income



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